BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Diploma in Construction and the Built Environment Pearson BTEC International Level 3 Extended Diploma in Construction and the Built Environment Pearson BTEC International level 3 Diploma in Civil Engineering Pearson BTEC International Level 3 Extended Diploma in Civil Engineering
Unit number and title	Unit 30: Public Health Engineering
Learning aim(s) (For NQF only)	Learning aim A: Understand below ground drainage systems and methods for treating sewerage
Assignment title	Below Ground Drainage and Sewage Treatment
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are working as a trainee civil engineer in a company specialising in public health engineering. The company provides design and build services to a range of clients. Currently, the management is working on an initiative to develop series of guidance documents across the whole organisation. These documents will be available to all employees via the company's intranet. The management has asked the Technical Team to develop three documents relating to drainage, sewage treatment, solid waste disposal and water quality and distribution. This is first of the three documents. These documents will cover the underpinning knowledge as well as application of such knowledge. The management require you to consider a site currently being developed to draw suitable context for various sections of the document. Though you have recently joined the company, your team leader has confidence in your abilities to produce these documents due to your positive attitude towards work. Details of the development are given below: The development has been proposed along the river bank after due consideration of flood levels over the last 125 years. The river is not used for navigation purposes currently. This is a residential development aiming to cater for the commuters. The development is few miles away from the nearest town and has no water and drainage utilities currently close by. The site has been used as a caravan site as well as by the travellers over a number of years. The site is almost flat in terms of its topography. There is a large expanse of land around the site which is low-lying. This area could be purchased or leased on subsidised rates

	from the owners if used to improve the environment. The preliminary site survey suggests that a lot of electronic equipment as well as construction waste has been dumped on site. Before the work on development can start, all this needs to be safely disposed off. There is evidence that the construction waste includes asbestos. Your company is considering making this as their signature sustainable development. They wish to make use of sustainable approaches to the drainage of both foul water and surface water. The company wants to explore innovative and sustainable solutions to water supply, solid waste management and disposal as well as sewage treatment. You will consider a cul-de-sac within the development to design below ground and surface water drainage systems. This cul-de-sac has twenty houses with an average household size of 3 persons. These are a mix of couples with young families as well as young executives sharing accommodation.
Task	Produce a document called *Guidance Document – Below Ground Drainage and Sewage Treatment*, using a suitable format as suggested by your team leader. The document will contain illustrations, sketches, calculations, line diagrams, photos and manufacturers' materials. Within this well referenced document, include the following: • Design considerations for below ground drainage including ventilation and access requirements. • Design consideration for surface water drainage including all possible Sustainable Urban Drainage System (SuDS) features. • Detailed discussion of principles relating to separate and combined systems. Please provide example of their suitability. • Comprehensive line drawing(s) for the given scenario showing pipe layout, falls, materials used, dimensions, ventilation, access and capacities for below ground drainage. These drawings MUST be annotated with details. • Comprehensive line drawing(s) for the given scenario showing pipe layout, falls, materials used, dimensions, access, capacities and details of SuDS features used for surface water drainage. These drawings MUST be annotated with details.

	• A comparison of options considered, and justification of the final design choices made. • Details relating to installation, testing and maintenance of proposed below ground drainage system • Detailed discussion exploring options to treat sewage and justifying the final choice(s) made. The justifications must be supported with references to credible information sources. You could include sketches to show the concept designs.
Checklist of evidence required	An appropriately referenced word-processed document, using a suitable referencing style such as Harvard. Line drawings showing layout, components, fittings and annotated with details of falls, sizes, materials, capacities, dimensions and ventilations and access arrangements. Detailed calculations to support the proposed design. Illustrations/sketches/concept designs to support the discussions Use of credible and range of resources.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
A.P1	Explain design requirements for below ground drainage systems for surface water and foul water from buildings.
A.P2	Explain methods of treating domestic sewerage in a given situation.
A.M1	Assess the design requirements for below ground drainage systems and treatment of domestic sewerage, using calculations to support decisions for a given situation.
A.D1	Justify the suitability of alternative approaches to below ground water drainage and domestic sewerage treatment, including reference to calculations, maintenance requirements and testing for a given situation.

Sources of information to support you with this Assignment	**Books** Bartlett, R E. Public Health Engineering: Sewerage, Second Edition (CRC Press – 2003) ISBN 9780203210895 Chadderton D – Building Services Engineering, 6th Edition (Routledge, 2012) ISBN 978-0415699327 Greeno R and Hall F – Building Services Handbook, 9th Edition (Routledge, 2017) ISBN 978-1138244351

	Web resources CIBSE Society of Public Health Engineers https://www.cibse.org/Society-of-Public-Health-Engineers-SoPHE
Other assessment materials attached to this Assignment Brief	*None*